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AQUASTATS

Ontario Aquacultural Trout Production in 1988 with an Historical Perspective of the Industry's Development

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SUMMARY

In 1988, the Ontario trout industry consisted of 120 commercial farms producing 1,830 tonnes of trout for human consumption. The total value of the industry is estimated to have exceeded $30 million. The farm-gate value alone of this product was nearly $10 million and generated 283 person-years of employment. The industry is expected to expand annual production by approximately 25% per annum over the next two years, producing 2,270 tonnes in 1989 and over 2,700 tonnes in 1990.

INTRODUCTION

Although fish have been cultured in Ontario since at least 1866, the commercial production of trout for human consumption began in 1962. Prior to this, fish culture was primarily the concern of federal and provincial government hatcheries, with a focus on recreational fisheries and feral stock management. Changes to the Game and Fish Act in 1962 allowed for the sale of brook and rainbow trout for human consumption, which resulted in creating a new industry.

Since 1962, the number of commercial trout farms has increased from 16 to 120, with annual production rising to 1,830 tonnes. However, to date there has been no systematic gathering of production related statistics, and consequently the quantitative description of the industry's development is deficient. The Aquaculture Extension Centre at the University of Guelph, in consultation with federal and provincial regulatory agencies and representatives of the trout industry [1], carried out a survey of the known trout production farms in Ontario.

1. *Department of Fisheries and Oceans, Ontario Ministry of Agriculture and Food, Ontario Ministry of the Environment, Ontario Ministry of Natural Resources, Ontario Aquaculture Research & Services Co-ordinating Committee, Ontario Trout Farmers' Association, Ontario Trout Producers Co-operative Ltd.*

A total of 225 potential trout farms were determined from the Ontario Ministry of Natural Resources (OMNR) records as well as in-house data files. These 225 potential farms consisted of 120 commercial trout farms, 42 fee-fishing preserves, 36 "hobby farms" and two exclusive bait-fish farms. Twenty-five farms had either stopped producing or never developed further than obtaining the necessary OMNR licences.

SPECIES CULTURED

The vast majority (over 99% of the 1988 annual production) of Ontario's trout production consists of rainbow trout. Of the 120 farms, 25 farms raised brook trout in addition to rainbow trout. Special research permits from OMNR allow the culture of other species and a few farms raise brown trout, Atlantic salmon and Pacific salmon (Chinook and Coho) on an experimental basis. In addition, six farms reported raising other species that included bass and baitfish.

ANNUAL PRODUCTION AND FARM SIZE

In 1988, Ontario produced an estimated 1,830 tonnes (approximately 4 million pounds) of rainbow trout for human consumption. This value was determined from a mail and telephone survey conducted between November and February, 1988-89 of the 120 known commercial fish farms. Production data was reported by 83 farms (69%) accounting for 1,070 tonnes (58%). Estimates of production were made for the remaining 37 farms from the authors' prior personal experience with the farms concerned, accounting for 632 tonnes. This accounts for an absolute survey response of 1,702 tonnes, which is believed to be conservative because of under-reporting and significant missing data. The authors' suggest that an additional correction factor of between 5 and 10% provides the more accurate estimate of 1,830 tonnes. This adjusted total annual production of 1,830 tonnes concurs with the production estimate of approximately 1,875 tonnes obtained from conversion of the 1988 total fish feed sales in

Ontario. Figure 1 shows the rapid increase in annual production as the industry has passed from a developmental level to an exponential growth stage. Production is projected to be 2,270 tonnes (approximately 5 million pounds) in 1989, rising to over 2,700 and 3,600 tonnes in 1990 and 1995, respectively (Table 1).

Table 1. Ontario Aquacultural Production of Trout for Human Consumption – Historical and Current Estimates and Future projections.

Year	Annual Production[a] Tonnes	Aver. Whole-sale Price $ per kg	Total Farm Gate Value[e] Million $
1962	0	-	-
1970	90	1.80[b]	0.17
1972	50	1.47[b]	0.08
1975	140	2.05[b]	0.30
1980	530	3.97[c]	2.20
1981	520	3.30[b]	1.79
1982	540	3.65	2.06
1983	500	4.00[d]	2.09
1984	500	4.25	2.22
1985	700	4.50	3.29
1986	1,130	4.75	5.61
1987	1,500	5.00	7.84
1988	1,830	5.06	9.68
1989	2,270	5.06	12.00
1990	2,720	5.10	14.50
1995	3,630	5.60	21.24

(a) Estimates for 1962-1987; AQUASTATS data for 1988; projections for 1989-1995.

(b) Blum, H., 1979, Trout Farming in Ontario- an industry study. OMAF Economics Information, 26p.
Blum, H., 1982, Trout Farming in Ontario. OMAF factsheet 82-080,4 p.

(c) Robbins, N.J. et al., 1980. A Preliminary Marketing Study of the Ontario Trout Industry. Ontario Trout 3 (5): 1-10.

(d) MacCrimmon, H.R., 1984. An Overview of Aquaculture in Central Canada. Can. Spec. Publ. Fish. Aquat. Sci. 75:42-55.

(e) Farm-gate retail and wholesale values combined.

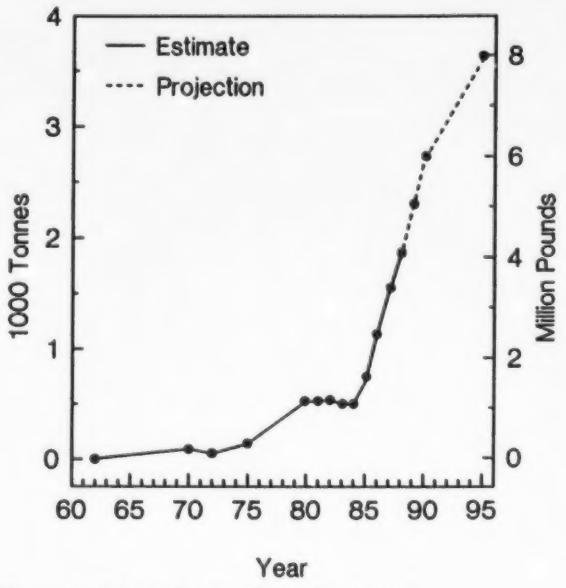

Figure 1. Ontario Farmed-Trout Production

Most Ontario trout farms are small to medium-sized operations (Figure 2). Of the 92 farms producing trout in 1988, 25% produced less than two tonnes per year (4,500 lbs per year), 50% produced less than nine tonnes per year (20,000 lbs per year) and 75% produced less than 23 tonnes per year (50,000 lbs per year). Twenty-eight farms were under development and had not started production in 1988, and have been classified as "new farms". There are a few large farms in Ontario, some producing over 180 tonnes per year and consequently the distribution of total production is highly skewed. Of the 92 farms currently producing fish, 50% of the total production came from only 13 farms (14%), while 75% was produced by 32 farms (35%). Nevertheless, this distribution is less skewed than it was in 1980, where 50% and 75% of the 530 tonnes was produced by 12% and 26% of the 43 production farms, respectively[2].

FARM DISTRIBUTION

The geographical distribution of farms is concentrated in the central and south-western region of Ontario, with 83 farms (69%) located within a 100 km radius of either London or Toronto (Figure 3). Two new farms are located near Thunder Bay in northern Ontario. This distribution reflects readily available water sources, population density and pressure to diversify existing agricultural practices in this region (e.g. tobacco farming).

PRICE AND ECONOMIC VALUE

The total farm-gate value of the 1,830 tonnes produced in 1988 is estimated at $9.68 million. Most of the

2. *Original data from Robbins N.J., Stephenson J., Fawcett M. and Mooney H., 1980, Ontario Trout 3(5): 1-10.*

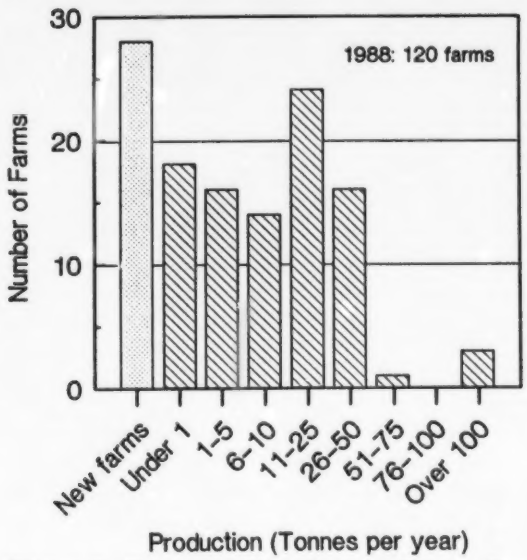

Figure 2. Frequency Distribution of Trout Farms in Ontario by Scale of Production.

production was sold wholesale (91.4%) at an average price of $5.06 per kg ($2.30 per lb), range $3.97 - 11.02 per kg ($1.80 - 5.00 per lb). The retail price averaged $7.75 per kg ($3.52 per lb), range $4.41 - 13.23 per kg ($2.00 - 6.00 per lb). These prices are for fish sold "in the round", although the range in price, especially retail price, suggests that some misreporting of processed fish may also be included.

The Ontario trout industry is typically a small business venture, employing an average of two persons per farm at the farm-gate level (range 1 - 24 persons per farm). Nevertheless, the production of trout for human consumption generated a total of 283 person-years of employment at the farm-gate level in 1988. This consisted of 158 person-years of full-time employment (40 hours and over per week for 12 months of the year) and 125 person-years of part-time employment (all other work schedules).

Benefits to the economy from Ontario aquaculture are substantial. The total value of the Ontario trout industry was conservatively estimated to exceed $30 million in 1988. This figure includes the farm-gate value of fish sold and estimates of farm operating costs, value added through processing and new capital investment. Farm operating costs were estimated on the assumption that feed sales and labour costs represent 30 and 20%, respectively. While value added through processing and new capital investments were estimated from the authors' knowledge of the overall industry.

For the 57 farms reporting annual production and employment (accounting for 1,071 tonnes or 59% of the total production), the median production efficiency was 4,540 kg per person per year (25th percentile[3] = 1,130 kg per person per year, 75th percentile = 8,500 kg per person per year). Those farms that have been operating for five or more years have a higher efficiency, median 6,800 kg per person per year (25th percentile = 2,610 kg per person per year, 75th percentile = 9,900 kg per person per year). This level of production efficiency is comparable to the 7,820 kg per person per year reported for the 1987 salmonid production in British Columbia[4].

A similar pattern of production efficiency is obtained by relating labour requirements to the dollar value of production. Data available from 51 farms representing $5.15 million in sales, reveal a median production efficiency of $16,780 per person per year (25th percentile = $6,250 per person per year, 75th percentile = $38,000 per person per year).

Although the figures for Ontario are only approximate, and many farms do not depend exclusively upon trout

3. *Percentiles are values above and below which a given percentage of all cases fall. For example, 25% of all cases have values less than or equal to the 25th percentile.*

4. *Canadian Aquaculture, Jan/Feb 1982, page 15.*

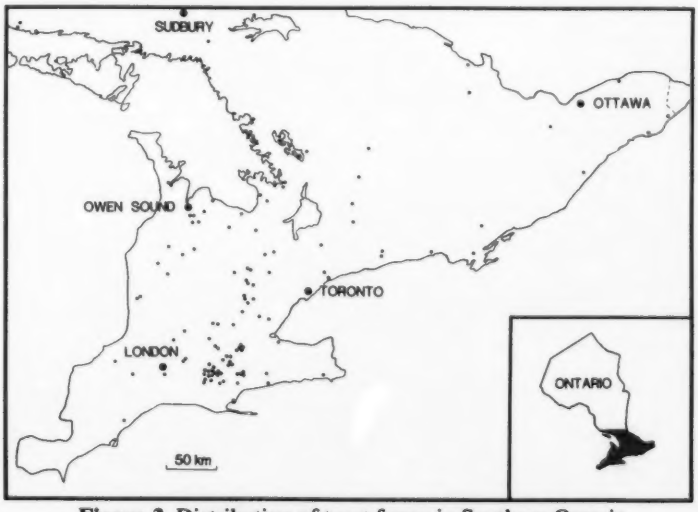

Figure 3. Distribution of trout farms in Southern Ontario

production for revenue, they do suggest that a number of farms may be grossly inefficient at rearing fish, at least from a manpower perspective.

FUTURE DEVELOPMENTS AND CONCERNS

By the end of 1987, Ontario was the major producer of domestic trout for human consumption in Canada, accounting for over 65% of the country's total production (Figure 4). The large number of "new farms" (28) that will begin to produce fish for sale in 1989, combined with the number of current farmers that anticipate increasing their production suggests that Ontario will continue its strong expansion for the next few years, and projections are for a 24% increase in production in 1989, with a similar increase for 1990. This expansion in domestic production, combined with imported trout from the U.S.A. and competition with Atlantic and Pacific salmon, will put increasing pressure on Ontario's farmers to develop their own niche.

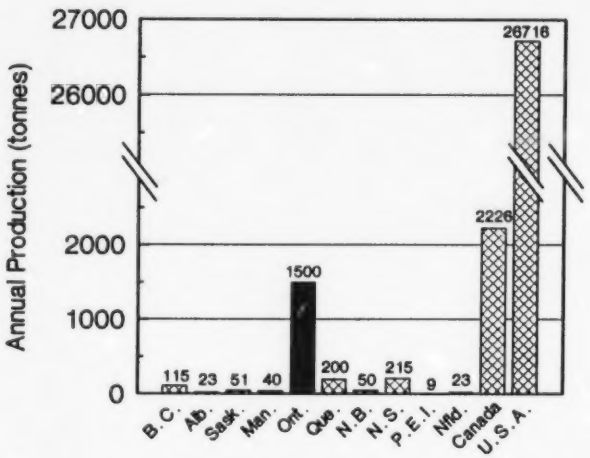

Figure 4. North American Trout Production for Human Consumption in 1987 (U.S.A. production for September 1987 - August 1988). Source: Commercial Aquaculture in Canada, 1988. D.F.O. Ottawa. New York Agricultural Statistics Service, 1988. New York.

Three main areas for attention exist. First, while average prices have remained more-or-less stable over the last couple of years, the variation reported in the survey suggests that it is possible for quality products to be sold within current market sectors.

Second, the overall consumption of fish products (including seafood) in Canada has been increasing steadily, although it was only 7.4 kg per person per year compared to 26 kg per person per year for poultry and 72 kg per person per year for red meat [5]. Nevertheless, the consumption of certain red meat products has decreased over the past decade, e.g. beef and veal, and replacement with fish (specifically farm-raised fish since the capture fisheries are under increasing pressure) is of growing importance.

Finally, anticipated changes to the Game and Fish Act will permit a wider range of species to be cultured and allow for an expansion in aquacultural products marketed. For example, there is considerable interest in arctic char culture, especially in northern Ontario, and this diversification should strengthen Ontario's aquaculture base.

5. *Statistics Canada, 1988. Apparent Per Capita Food Consumption in Canada, Cat. No. 32-230. Data reported are for 1986 (latest available year for fish consumption).*

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